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EXAMINER

LEE, CHEUKFAN

ART UNIT

PAPER NUMBER

2622

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/918,727

Applicant(s)

WATANABE, KOUJI

Examiner

Cheukfan Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-13 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/5/02</u> <u>2/17/01</u> . | 6) <input type="checkbox"/> Other: _____  |

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1. Claims 1-13 are pending. Claims 1, 6, 7, 8, and 11 are independent.

2. The drawings are objected to because of the following:

Fig. 8 should be labeled with – PRIOR ART --.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagabusa (U.S. Patent No. 5,036,397) in view of well known art.

Regarding claim 1, Nagabusa discloses a method of controlling a one-dimensional solid-state imaging device which comprises a photodiode array (1) having diodes for reading individual pixels arrayed in a line, a transfer gate (2) for outputting electric charges from the respective photodiodes in the array, and a transfer path (in 2) for transferring the electric charges supplied from the transfer gate (2) to an output terminal (3).

The method comprises using only intermediate region (N) of the array (1) for imaging without using regions (N<sub>DA</sub>, N<sub>DB</sub>) at the one end side and the other end side of the array (1), and reading out pixels first from the region (N<sub>DA</sub>) at the one end side and next from the intermediate region (N), stopping reading out pixels in the region (N<sub>DB</sub>) at

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the other end side at a point where pixels in a smaller number than pixels in the region (N<sub>DA</sub>) at the one end side of the array (1) are remained, thereby eliminating need for reading out all pixels in the array (1) (Figs. 1 to 2(d), col. 2, line 35 to col. 4, line 52)

Nagabusa differs from the claimed invention in that Nagabusa discloses one but not more than one photodiode arrays. However, the examiner took Official Notice of the fact that one-dimensional solid-state imaging devices having three (3) linear photodiode arrays for reading red, green and blue color components of a pixel, respectively, are well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ three of the linear photodiode array of Nagabusa to produce color image signals by incorporating three color filters for read, green, and blue color signals, in order to reproduce a color image.

Regarding claim 9, the one-dimensional device of Nagabusa is based on a signal transfer system and the transfer path is an analog shift register (2) (Fig. 1).

Regarding claim 10, the one-dimensional device is a line CCD sensor.

Claim 11 claims a method of reading an image exposed on a photographic film, the method comprising the method of controlling in claim 8. Please refer to the discussion for claim 8 for the method of controlling.

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Nagabusa further discloses an image scanner in which the method is applied (col. 1, lines 11-15).

Nagabusa does not explicitly state that the image scanner is a photographic film scanner. However, one of ordinary skill in the art would have realized that film scanners employ one-dimensional CCD imaging device, too. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the method of Nagabusa to a photographic film image scanner in order to read a film image at high speed.

Claims 12 and 13 depend upon claim 11 and recite the limitations of claims 9 and 10, respectively, and thus are rejected for the same reasons given for claims 9 and 10, respectively.

5. Claims 1-3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tone et al. (U.S. Patent No. 5,640,251) in view of well known art.

Regarding claim 1, Tone et al. discloses a divided one-dimensional solid-state imaging device (Fig. 4) comprising a photoelectric conversion element array and their corresponding output transistors for outputting electric charges and charge transfer paths (Figs. 4 and 2). The photoelectric conversion element array is divided into a plurality of sections differing in the number of pixels in the arraying direction, the respective sections connecting to the corresponding ones of the charge transfer paths and output terminals. In a high speed reading mode, pixels 1 to 5040 constitute a first

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section, pixels 5041 to 6061 constitute a second section, pixels 6161 to 7280 constitute a third section, pixels 7281 to 8400 constitute a fourth section, and pixels 8401 to 13440 constitute a fifth section. Pixel rows in the respective sections (the three middle sections are read out in parallel at the same time from the output terminals corresponding to the respective sections (col. 7, lines 49-61, col. 5, lines 16-44).

Tone et al. differs from the claimed invention in that discloses one but not more than one photodiode arrays as claimed. However, the examiner took Official Notice of the fact that one-dimensional solid-state imaging devices having three (3) linear photodiode arrays for reading red, green and blue color components of a pixel, respectively, are well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ three of the linear photodiode array of Tone et al. to produce color image signals by incorporating three color filters for read, green, and blue color signals, in order to reproduce a color image.

Further, Tone et al. does not disclose that the photoelectric conversion elements are photodiodes. However, the fact that photodiodes are one kind of photoelectric conversion elements and are considered to be suitable for high-speed operation is known to one of ordinary skill in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ photodiodes as the photoelectric conversion element array of the obvious device of Tone et al. discussed above in order to read the image at high speed.

Regarding claim 2, see Fig. 2 and col. 5, lines 45+.

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Regarding claim 3, Tone also discloses use of line CCD sensor (col. 3, line 30 and col. 1, line 12).

Claim 6 recite the limitations of claim 1 and in addition "concentrating the sections comprised of a small number of pixels at one part in an arraying direction of said photodiode array" and "using only the sections with a small number of pixels concentrated at one part in the arraying direction for reading of an image projected in a narrow area". Tone et al. also disclose these additional limitations. Note the use of only the sections with a small number of pixels concentrated at the middle part of the array in the arraying direction for reading an image projected in a narrow area in the high-speed mode.

Claim 7 claims an image reading apparatus employ a divided one-dimensional solid-state imaging device to read an image on a photographic film, the image device being identical to the device of claim 1 discussed above. Please refer to the discussion for claim 1 for the imaging device.

Tone et al. further discloses an image reading device in which the one-dimensional imaging device is employed (col. 3, lines 7-20). The image-reading device reads an image on a document being transported by the document transport portion (6).

Tone et al. does not explicitly state that the image-reading device is a photographic film-reading device. However, one of ordinary skill in the art would have known that in general, film scanners reads an image of a photographic film as the film is

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transported through the scanning or reading section. Since the image reading device of Tone also read an image of a document transported by a document transport portion, it would have been obvious to one of ordinary skill in the art at the time the invention was made to transport a photographic film through the reading section in order to reproduce an image on a photographic film.

6. Claims 4 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is an examiner's statement of reasons for allowance:

Claims 4 and 5 would be allowable because the closest prior art Tone et al. (U.S. Patent No. 5,460,251) teach a linear CCD array and not a device such as MOS type sensor that is based on an addressing system using switching transistors as the output transistors and using digital shift registers as the transfer paths.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."



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8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chen et al. (U.S. Patent No. 6,721,101) discloses a method and structure for accelerating image-sensing speed of a CCD image-sensing device.

Cilke et al. (U.S. Patent No. 5,912,746) discloses a contact image sensor for a large format scanner, employ a plurality of sensors mounted on a plurality of sensor boards.

Quinn (U.S. Patent No. 5,272,113) discloses a scanner having a plurality of photosensor arrays arranged in a linearly on a substrate.

Tsai et al. (U.S. Patent No. 5,784,178) discloses a high performance contact image sensor (Figs. 2 and 8).

Kim (U.S. Patent No. 5,363,216) discloses a contact image sensor module comprising a plurality of blocks for transforming light being incident upon into image data.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cheukfan Lee whose telephone number is (703) 305-4867. The examiner can normally be reached on 9:30 a.m. to 6:00 p.m., Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on (703) 305-4712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cheukfan Lee  
March 15, 2005



*Cheukfan Lee*